

Study Guide

Associate Caltrans Administrator Written Examination



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CANDIDATE STUDY GUIDE

Introduction

The examination process for the Associate Caltrans Administrator consists of two parts:

1. Minimum qualification determination as specified in the examination bulletin
2. Written examination

Minimum Qualifications

The minimum qualification determination is based on your background, schooling, and job experience as outlined on your examination application. All applications and resumes must be submitted by the final filing date.

Written Examination

The Associate Caltrans Administrator written examination consists of 125 questions covering the following three segments:

1. Mathematical Calculations
2. Writing Skills
3. Analyzing, Interpreting, and Applying Written Materials

Time Allowance

You will have a total of **3 hours and 30 minutes** to complete the entire examination. When you finish the questions in each examination segments, you will continue on to the succeeding examination segments.

Pass Points

Separate pass points will be set for each of the three segments in the examination. You must receive a passing score on each of the three segments in order to pass the examination. Your score on each segment will be based on the number of questions you answer correctly.

Calculators

The use of calculators will be permitted during this examination.

The remainder of this study guide contains information about the type of content and exam questions

found in the three segments. You should familiarize yourself with this information. If you identify areas in which you may be weak, you are encouraged to concentrate your study efforts in those areas. For example, if you have difficulty in multiplying fractions or in understanding flowchart diagrams, you should work additional problems in those areas. This will help you build your skills and thereby, improve your examination performance.

Using This Study Guide

This material has been developed to help you prepare for the Associate Caltrans Administrator written examination. Review the material carefully. The more time you spend studying, the better you should do on the examination. Do not wait until the last day to begin studying. Make sure that you thoroughly understand all the concepts presented in this study guide before you take the examination.

To assist in your study, answers to the items in the math segment and selected questions in the writing segment have been explained. In the math segment, remember that some problems can be solved in more than just one way. The explanations provided in this study guide simply illustrate one approach to solving math computational problems that were effective for each particular question.

How You Should Begin

We suggest that you read through the study guide once to get a feel for the material. The next time you read through it, underline or mark the key points that you feel are important. Try to understand the basic principles involved. Try to read and review throughout the study period. Increase your study time period the last few days before the examination, and then get a good night's sleep before the examination.

You may not refer to this guide during the exam.

DISCLAIMER

The contents of this study guide reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This study guide does not constitute a standard, specification, or regulation.

Examples of Knowledge, Skills, and Abilities Measured by This Examination

The examination measures knowledge, skills, and abilities required for successful job performance. The examination will assess the following:

Mathematical Calculations

- Knowledge of basic arithmetic concepts (including addition, subtraction, multiplication, division, percentages, and fractions) to calculate and process numerical data.
- Ability to perform arithmetic computations (including addition, subtraction, multiplication, division, percentages, and fractions).
- Ability to check and verify the accuracy of a variety of mathematical calculations.
- Ability to extract specific, relevant data and information from a larger body of materials.
- Ability to analyze and evaluate data and information to formulate conclusions and courses of action.

Writing Skills

- Knowledge of proper spelling, grammar, punctuation, and sentence structure to ensure that written materials prepared and reviewed are complete, succinct, and error-free.
- Ability to write memos and letters using proper grammar, punctuation, and sentence structure.
- Ability to write reports, policies, and procedures using proper grammar, punctuation, and sentence structure.
- Ability to review and edit written materials (such as memos, letters, reports, procedures) for proper content, format, grammar, punctuation, and sentence structure.
- Ability to proofread written materials (such as reports, correspondence, and procedures) to ensure that prepared materials accurately and clearly present the information documented.
- Ability to communicate information clearly and concisely, in writing, to audiences with varying levels of understanding.

Analyzing, Interpreting, and Applying Written Materials

- Ability to comprehend and interpret complex information and materials, such as standards, procedures, and policies.
- Ability to read and comprehend a variety of technical, complex information related to departmental or program policies, procedures, standards, and regulations (such as departmental manuals, union contracts or MOUs, legislative or regulatory mandates, and contract documents).
- Ability to interpret complex or technical information and materials (such as departmental policy and procedures, manuals, union contracts or MOUs, industry standards, legislative and regulatory documents, or project plans and specifications).
- Ability to assimilate information and data from multiple sources into a concise whole for effective analysis and response.
- Ability to extract specific, relevant data and information from a larger body of materials.
- Ability to evaluate reports and other job-related materials and documents to make recommendations for action based upon the documented data and information.
- Ability to apply policies and procedures in the completion of work assignments.

- Ability to apply technical principles and standards in the completion of work assignments.
- Ability to analyze and evaluate data and information to formulate conclusions and courses of action.
- Skill to make appropriate decisions based upon the facts and information available.

General Strategies for Taking the Written Examination

1. **Your attitude about the examination process can make a difference.** Approach the examination confidently. Take it calmly. Arrive on time and be ready for the examination.
2. **Listen carefully to all directions.** Ask questions if there are some things you do not understand. However, be aware that examination proctors are instructed not to answer questions about or to provide clarification of examination content.
3. **Determine whether you want to use a calculator to perform mathematical computations.** You will be allowed to use a calculator during the examination. If you choose to use a calculator, be sure you can work it well enough to perform the necessary math computations.
4. **Do the easy questions first.** Postpone harder questions until later. Make an initial guess on a difficult item in case you do not have enough time to go back to it.
5. **Watch your time during the examination.** Do not spend too much time on any one question. Check your answers if you have time.
6. **No question is meant to be a "trick" or "catch" question.** No question should have two correct answers. You will be asked to choose the one answer that is most correct from among the choices given. Your score on the examination will be based only on the number of correct choices you make.
7. **Interpret words according to their generally accepted meanings.**
8. **Rephrase difficult questions for yourself.**
9. **Answer every question if you have time.** You can improve your odds of getting the correct answer if you can eliminate one or more alternatives before guessing.

Taking the Written Examination (Continued)

10. **Be certain that you understand how to use the computer scannable answer sheet correctly.** Be careful to make clean erasures on your answer sheet and to mark only one correct answer per item. Fill in the answer space completely.

11. **If you feel an item is incorrect, you may call it to your proctor's attention after the examination is over.** This examination has been developed using extensive quality control measures to ensure a flawless examination; however, mistakes can occur. Any items brought to the attention of the proctor after the examination will be carefully reviewed. Subject Matter Experts who review this information often find that the candidate has just missed the point of the item. Try to focus on doing well on many items on the examination rather than getting bogged down on "making your case" on just one item that counts as one point.

SECTION I

MATHEMATICAL CALCULATIONS

Instructions:

Examination Section I is designed to assess your knowledge and skill in solving a variety of mathematical calculations. Your answers to the questions in this section are to be based only on the data provided to you in the questions. Do not use any other information upon which to base your answers.

Explanation: This section of the examination measures your knowledge of mathematics and your skill in performing a variety of math computations. While Associate Caltrans Administrators are taught specific formulas on the job, it is necessary to have a good understanding of basic mathematical principles and functions as a foundation. Those basic functions include addition, subtraction, multiplication, division, fractions, decimals, ratios, and percentages. This section of the written examination will present you with 25 items in a multiple-choice format.

SAMPLE QUESTIONS

1. 7 divided by $\frac{4}{9}$ equals

- a. $1 \frac{2}{9}$
- b. $3 \frac{1}{4}$
- c. $8 \frac{7}{9}$
- d. $15 \frac{3}{4}$

Reasoning:

Multiply the numerators to get the new numerator

$$7 \times 9 = 63$$

Multiply the denominators to get the new denominator

$$1 \times 4 = 4$$

Reduce the fraction if necessary

$$63 \div 4 = 15 \frac{3}{4}$$

$$\frac{7}{1} \times \frac{9}{4} = \frac{63}{4} = 15 \frac{3}{4}$$

SAMPLE QUESTIONS (CONTINUED)

2. One bridge is 155 yards long while another bridge is 173 yards long. How many total yards in length are two bridges combined?

- a. 328
- b. 358
- c. 583
- d. 823

Reasoning:

Add 155 yards to 173 yards
 $155 + 173 = 328$

3. The area of a concrete surface measuring 72 feet wide by 47 feet long is equal to ___ square feet.

- a. 3,284
- b. 3,384
- c. 3,484
- d. 4,384

Reasoning:

Multiply the width by the length to find the total area
 $72 \times 47 = 3,384$

4. 40,812 divided by 228 is _____.

- a. 143.0
- b. 169.5
- c. 179.0
- d. 180.0

Reasoning:

$$\begin{array}{r} 179.0 \\ 228 \overline{)40812.0} \end{array}$$

SAMPLE QUESTIONS (CONTINUED)

5. 78 is 75% of what number?

- a. **104**
- b. 105
- c. 110
- d. 500

Reasoning:

75% is the same as 75/100. This allows the problem to be expressed algebraically as follows:

78 is the same proportion to the unknown number, x , as 75 is to 100,

$$\text{or } \frac{78}{x} \approx \frac{75}{100}$$

Then solve for x : $(75) \times (x) = (78 \times 100)$

$$75x = 7,800$$

$$x = \frac{7,800}{75} = \mathbf{104}$$

Read the passage below to answer questions 6 and 7.

A work detail of nine people consisted of eight laborers and one supervisor. The supervisor instructed 5 laborers to plant shrubs along a portion of a highway. The supervisor instructed the rest of the laborers to collect trash and debris that had accumulated along the highway.

6. What percentage of the total work detail did the supervisor represent?

- a. 10.0 %
- b. 10.5 %
- c. 11.0 %
- d. **11.1 %**

Reasoning:

$$1/9 = 0.111 = \mathbf{11.1 \%}$$

7. What percentage of the laborers were instructed to plant shrubs?

- a. 50.0 %
- b. 54.5 %
- c. **62.5 %**
- d. 71.0 %

Reasoning:

$$5/8 = 0.625 = \mathbf{62.5 \%}$$

SAMPLE QUESTIONS (CONTINUED)

Use the following table to answer questions 8 through 10.

Listed below are the fees paid to contractors on a highway project last year.

Company	Service	Fees Paid
Bed Rock Engineering, LLC	Civil Engineering and Design	\$ 83,408.00
Triple C Construction Co.	Engineering and Construction	\$ 46,889.54
West Coast Construction, Inc.	Engineering and Construction	\$ 72,047.33
Bea & Bea Transport	Trucking	\$ 29,906.81
Acme Hauling and Maintenance	Trucking	\$ 31,330.14

8. Referring to the table, how much was paid to trucking companies last year for this project?

- a. \$ 29,906.81
- b. \$ 61,236.95**
- c. \$ 83,408.00
- d. \$ 118,936.87

Reasoning:

The table shows two companies as providing trucking services for the project last year: Bea & Bea Transport and Acme Hauling and Maintenance. Add the fees paid to those two companies to find the amount paid to all trucking companies on this project.

$$\begin{array}{r} \$ 29,906.81 \\ + \$ 31,330.14 \\ \hline \$ 61,236.95 \end{array}$$

9. Referring to the table, how much was paid for engineering, construction, and trucking on this project last year?

- a. \$ 83,408.00
- b. \$ 161,236.95
- c. \$ 255,408.00
- d. \$ 263,581.82**

Reasoning:

All of the companies in the table were paid for engineering, construction, or trucking on the project last year. Therefore, to find the total, add all of the fees in the right hand column.

$$\begin{array}{r} \$ 83,408.00 \\ \$ 46,889.54 \\ \$ 72,047.33 \\ \$ 29,906.81 \\ + \$ 31,330.14 \\ \hline \$ 263,581.82 \end{array}$$

SAMPLE QUESTIONS (CONTINUED)

10. Referring to the table, how much money could have been saved on this project last year if all fees paid for engineering, design, and construction had been reduced by ten percent?

- a. \$ 8,340.80
- b. \$ 11,236.95
- c. **\$ 20,234.49**
- d. \$ 26,358.18

Reasoning:

There are two ways of finding the correct answer. Begin by identifying the three companies that were paid for engineering, design, or construction services.

One way to calculate the correct answer is to add all the fees paid to the three engineering, design, and construction companies as shown below. Then calculate ten percent of the total amount.

Company	Fees Paid	10% of Total
Bed Rock Engineering, LLC	\$ 83,408.00	
Triple C Construction Co.	\$ 46,889.54	
West Coast Construction, Inc.	\$ 72,047.33	
TOTAL	\$202,344.87	\$ 20,234.49

A second way is to identify the amount that each company was paid, calculate ten percent of each company's fees, and find the sum.

Company	Fees Paid	10% of Fees
Bed Rock Engineering, LLC	\$ 83,408.00	\$ 8,340.80
Triple C Construction Co.	\$ 46,889.54	\$ 4,688.95
West Coast Construction, Inc.	\$ 72,047.33	\$ 7,204.73
TOTAL		\$ 20,234.49

Note that the exact calculation comes to \$20,234.487 in both solutions. When rounded to the nearest penny, each solution rounds to \$ 20,234.49.

SECTION II

WRITING SKILLS

Instructions:

Examination Section II is designed to assess your written communication skills. This section is comprised of several question types designed to assess your skills in constructing sentences and paragraphs using correct grammar, punctuation, word usage, and sentence structure.

Each reading passage is followed by one or more questions about the material you have read. Base your answers only on the material you have read and not on any prior knowledge you may have.

Explanation: As part of the job of an Associate Caltrans Administrator, you will frequently be required to communicate your thoughts and ideas in writing. The information that you write often will be very technical in nature, and your duty will be to express that information so that it can be understood by people who may not have your technical background.

This section of the examination is designed to measure your written communication skills. You are to choose the statement that best answers the question relevant to the passage. This section of the written examination will present you with 50 items in a multiple-choice format.

SAMPLE QUESTIONS

11. Highway maintenance _____ found to be important for the safety, comfort, and convenience of drivers and passengers riding in both _____ and commercial vehicles throughout the state.

According to the passage,

- a. was, private
- b. will, trucks
- c. were, cars
- d. did, buses

SAMPLE QUESTIONS (CONTINUED)

12. A review of the project _____ that the budget allocated for equipment _____ spent.
- a. indicates, was not been
 - b. will be indicated, will not
 - c. **indicated, had not been**
 - d. was indicate, could not become

Refer to the paragraph below to answer questions 13 through 15.

It is #13 that only a very small percent of carelessly discarded cigarettes actually start fires. This tends to breed indifference to the hazard but, with the millions of cigarettes smoked per day, the small percentage that #14 start fires is large enough to constitute the most serious of #15 fire hazards.

13. Which word best completes blank #13 in the paragraph above?
- a. probably
 - b. possibly
 - c. **probable**
 - d. analysis
14. Which word best completes blank #14 in the paragraph above?
- a. will
 - b. should
 - c. did
 - d. **does**
15. Which word best completes blank #15 in the paragraph above?
- a. using
 - b. unusual
 - c. **common**
 - d. communal

SAMPLE QUESTIONS (CONTINUED)

For each numbered line in the report below, indicate the number of writing errors in each line. Writing error(s) may consist of grammar, punctuation, word usage, and sentence structure. Use the following codes:

- a If there are NO (0) errors in the line, mark A on your answer sheet.
- b If there is ONE (1) error in the line, mark B on your answer sheet.
- c If there are TWO (2) errors in the line, mark C on your answer sheet.
- d If there are THREE (3) errors in the line, mark D on your answer sheet.

16. As a means of controlling prison violence, the california Department of
17. Corrections and Rehabilitation (CDCR) have established several ‘disciplinary confinement”
18. options, including administrative segregation and special housing units. Despite the
19. increasing use of such options, evidence shows inmate assaults (and the associated state costs)
20. continue to increase, Our examination identifies a numbers of shortcoming in the
21. Department;s disciplinary confinement policies and practices and offers recommendations
22. for improvement. Depending on the recommendations adopted, saving could be up to
23. \$10 million in 2005-06.

16. The correct answer is b. The word, “California” should be capitalized.

17. The correct answer is c. “have” should be “had” or omitted; the single quotation mark is wrong

18. The correct answer is a.

19. The correct answer is a.

20. The correct answer is d. “increase,” should be “increase.” (period)

“a numbers” should be “a number”

“shortcoming” should be “shortcomings”

21. The correct answer is b. semicolon in Department;s should be an apostrophe.

22. The correct answer is b. “saving” should be “savings”

23. The correct answer is a.

SECTION III

ANALYZING, INTERPRETING, AND APPLYING WRITTEN INFORMATION

Instructions:

Examination Section III is designed to measure your skill in analyzing, interpreting, and applying written information. You will be asked to analyze, interpret, and apply information and data contained in a variety of written materials.

Your answers to the questions in this section are to be based only on the information provided to you in the written materials. Do not use any other information upon which to base your answers.

Explanation: As part of the job of an Associate Caltrans Administrator, you will be required to read, comprehend, and apply a great amount of technical material. In addition, throughout your career, you will need to read technical materials in order to keep up-to-date on pertinent information related to Caltrans in general and to the duties of an Associate Caltrans Administrator in particular.

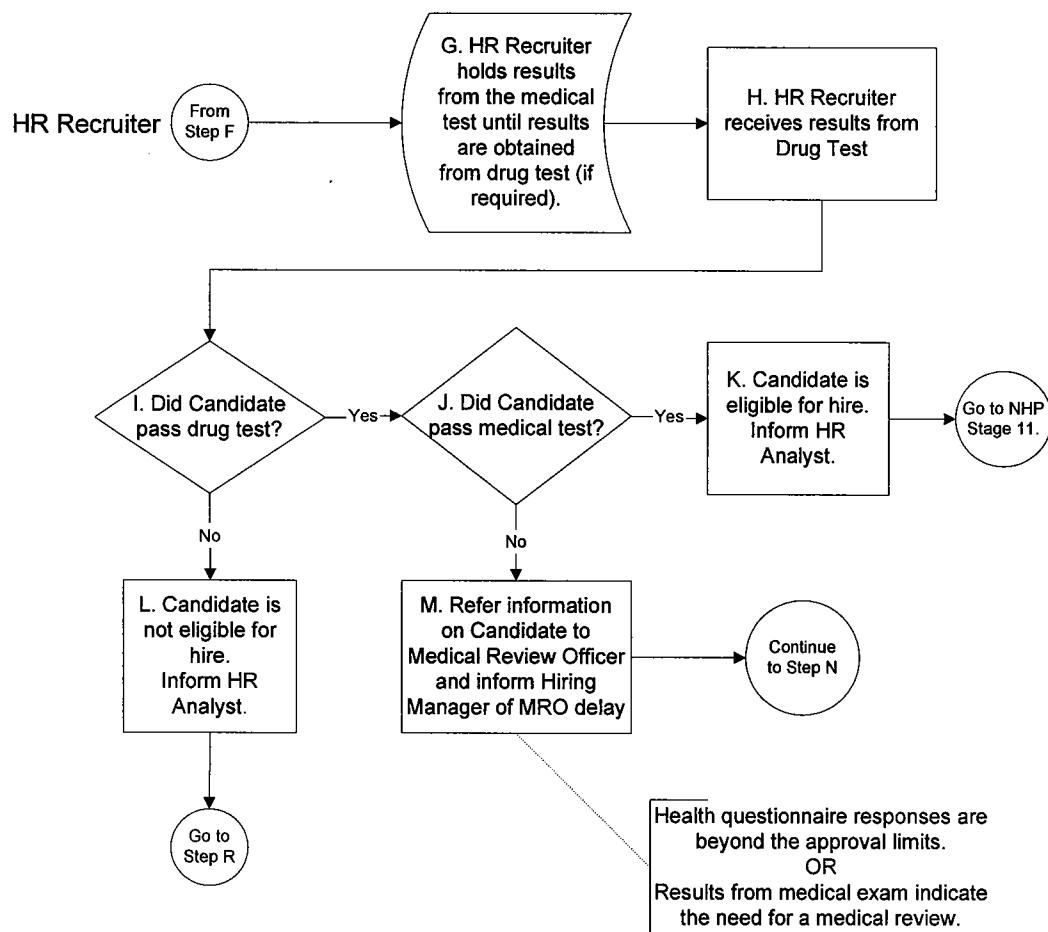
This section of the written examination is designed to measure your skill in reading, interpreting, and applying information presented in writing and through graphical illustration. You are to choose the statement that best answers the question about each illustration or written passage. This section of the written examination will present you with 50 items in a multiple-choice format.

SAMPLE QUESTIONS (CONTINUED)

Directions: Refer to the following flowchart diagram to answer questions 24 through 27.

Assume that you manage an efficiency improvement team for the medical testing process in an Employment Office. One portion of the current process is illustrated in the flowchart below.

Figure 2. Flowchart of Medical Testing Processes
Employment Department



SAMPLE QUESTIONS (CONTINUED)

Use the flowchart diagram to answer questions 24 through 27.

24. According to the flowchart diagram, when a job candidate finishes Step F and is required to take a drug test, what happens?
- a. **HR Recruiter holds the results from the medical test**
 - b. The candidate goes to Stage 11
 - c. MRO goes to Step N
 - d. The candidate takes a medical test
25. According to the flowchart diagram, what does the HR Recruiter do at Step H?
- a. obtains the results from the medical test
 - b. goes to Stage 11
 - c. continues to Step N
 - d. **receives the results from the drug test**
26. According to the flowchart diagram, what happens when a candidate passes a drug test?
- a. The candidate is not eligible for hire
 - b. The candidate goes to Stage 11
 - c. A determination about the candidate's eligibility is made by the Medical Review Officer
 - d. **A determination is made about whether the candidate passed the medical test**
27. If a candidate passes the drug test but fails the medical test, what happens?
- a. The candidate is eligible for hire
 - b. The candidate is not eligible for hire
 - c. **The candidate's information is sent to a Medical Review Officer**
 - d. The candidate's information is sent to the hiring manager

SAMPLE QUESTIONS (CONTINUED)

Directions: Refer to the following passage in your responses to items 28 through 32.

Throughout the planning, design and construction phases of a project, the possibility of entering into an agreement or agreements always exists. Every effort should be made to identify cooperative features as early as possible in the project development stage, particularly by the Project Development Team (PDT) where coordination and communication take place with the various units affected by the project.

Upon conception of a cooperative project, the Districts should enter into an agreement as soon as possible with the cooperative party (or parties) to outline understandings as to responsibilities for the various phases of project development to be performed. The type of agreement or agreements will depend upon the work to be covered and the identity of the other party.

A Memorandum of Understanding (MOU) is one type of document that may be used to start off the cooperative process. Sometimes also called Letters of Understanding or Letters of Intent, MOUs are often used on locally funded State highway projects to reach conceptual agreement on project scope, funding, staffing, and processing. It is important to remember that MOUs only constitute guides to the obligations, intentions, and policies of the parties involved. MOUs are not commitments for funding or programming, nor are they legally binding contracts. Therefore, it is recommended that, whenever possible, the Districts utilize formal agreements instead of MOUs.

Any funding commitments for the performance of work described in one or more MOUs will require the formation of a binding contractual cooperative agreement, standard agreement, or other traditional contract document utilized by the Department of Transportation in the normal course of its affairs.

MOUs may be prepared upon project conception. They should be simple documents to outline the understandings as to who does what during the various project development phases. All MOUs should stand alone, and they are not to be used as formal agreements, legally binding contracts, or as attachments or addenda to an agreement.

Formal cooperative agreements (or agreements) should be prepared as early as possible in the project development stage. Formal agreements will supersede MOUs, and they must contain appropriate language as to the respective obligations of each party for the remainder of project development and for construction, where appropriate. The State has no legal obligation to pay for costs incurred by another party in the absence of a formal executed agreement. Likewise, the State cannot expect reimbursement for doing work, including oversight, on a cooperative project *prior* to having a formal executed agreement. Therefore, a formal agreement must always be executed prior to incurring any costs for preliminary engineering, environmental studies, right-of-way activities, including acquisition, right-of-way engineering, and right-of-way utilities, reviews, etc.

SAMPLE QUESTIONS (CONTINUED)

Use the information presented in the passage to answer questions 28 through 32.

28. According to the passage, which best characterizes a Memorandum of Understanding?
- a. A legally binding contract
 - b. A formal agreement
 - c. A funding commitment
 - d. **A guide to intentions**
29. According to the passage, when during the project development phase should a formal cooperative agreement be prepared?
- a. **as early in the phase as possible**
 - b. when MOUs cannot be negotiated
 - c. upon completion of the development phase
 - d. when it comes time for financial reimbursement
30. According to the passage, which parties should make the most effort to develop cooperative agreements?
- a. **Project Development Team**
 - b. Attorneys for the State
 - c. The local Districts
 - d. The Department Director
31. According to the passage, what is the State's obligation to pay for costs incurred by another party under the authority of Memorandum of Understanding?
- a. The State will pay for all costs incurred under the MOU
 - b. **The State recognizes no obligation to pay**
 - c. Information must be obtained from the local District to authorize payment
 - d. The Department Director will decide whether or not to pay
32. According to the passage, which best characterizes a formal agreement?
- a. It is the same as a MOU
 - b. It can only be prepared upon project completion
 - c. **It supersedes a MOU**
 - d. It is a letter of intent

SAMPLE QUESTIONS (CONTINUED)

Use the Gantt chart presented to answer questions 33 through 35.

33. According to the Gantt chart, which project task is scheduled to take the longest time to complete?
- a. **data gathering**
 - b. data analysis
 - c. preliminary review of findings with the client
 - d. report writing
34. According to the Gantt chart, how much time will the client have to review the project's findings with senior management and to collect their comments and suggestions?
- a. one day
 - b. **one week**
 - c. two weeks
 - d. 21 days
35. Using the Gantt chart, assume that the client postponed the kickoff meeting until the week of April 17. If all tasks and their durations remain the same, the revised projected completion date of the project will be the week of
- a. May 29
 - b. June 5
 - c. **June 12**
 - d. June 19

STOP. You have now completed the Study Guide

for

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